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NOTES ON SPHINGIDÆ CAPTURED AT ORONO, MAINE, AND VICINITY.

BY MRS. C. H. FERNALD.

Lepisesia flavofasciata, Barnst.—Very rare, taken in the hottest part of the day, on lilac and apple blossoms; also on *Amelanchier Canadensis*.

Hemaris diffinis, Boisd.—Common on Tartarian honeysuckle and lilac, in the middle of the day.

Hemaris gracilis, G. & R.—Quite rare, found on the same flowers and at the same time as *H. diffinis*, and also flies about sunset.

Hemaris thysbe, Fabr.—Very common, flying in company with *H. diffinis*.

Amphion nessus, Cram.—Quite common in company with the last named species.

Deilephila chamænerii, Harris.—Some seasons quite common on Tartarian honeysuckle and lilac, at twilight.

Deilephila lineata, Fabr.—Taken on *Oenothera Lamarckiana* just after sunset, in September.

Philampelus pandorus, Hübn.—One example bred from larva on grape vine.

Philampelus achemon, Drury.—Larvæ found on grape vine, but failed to emerge.

Everyx chærilus, Cram.—Rare, at sugar, in July.

Smerinthus geminatus, Say.—Quite common at light, in June.

Smerinthus cerisyi, Kirby.—Very rare, at light, last of May.

Paonias excæcatus, A. & S.—Quite rare, at light, in June.

Calasymbolus myops, A. & S.—Two examples taken at light.

Triptogon modesta, Harr.—Rare, at light, first of July.

Ceratomia amyntor, Hübn.—Quite rare, on climbing honeysuckle.

Daremma undulosa, Walk.—Quite common, at light and on flowers in June.

Phlegethontius cingulata, Fabr.—Two examples a flowers of *Nicotiana affinis*, quite late in the evening, in the first of Sept.

Sphinx drupiferarum, A. & S.—Common at light, and on several kinds of flowers.

Sphinx Kalmiae, A. & S.—Found with *S. drupiferarum*.

Sphinx chersis, Hübn.—The most common Sphinx in this locality; taken at twilight on *Oenothera Lamarckiana* and *Nicotiana affinis*; also bred on ash; July.

Sphinx gordius, Cram.—Found on lilac and Tartarian honeysuckle, early in the evening.

Sphinx luscitiosa, Clem.—Rare, on climbing honeysuckle, at twilight.

Dolba hyleus, Drury.—Rare, on *Oenothera* and honeysuckle, at twilight.

Ellema Harrisii, Clem.—Rare, on honeysuckle, at twilight; also at light, in June.

ABNORMAL SPECIMEN OF THE GENUS SAMIA.

BY W. F. KIRBY, LONDON, ENG.

This remarkable specimen, which has puzzled every entomologist who has seen it, was bred by M. Alfred Wailly from a cocoon received from some part of North America. It may be a hybrid between *S. cecropia* and some other species, but if so, it is so different from all the other known species, that it is difficult to guess with what it could have been crossed. It is equally difficult to imagine that it is a new species. The specimen is a female, and equals the largest specimens of *S. cecropia* in size, measuring fully $6\frac{3}{4}$ inches in expanse; and the wings are more rounded and less oblique than in *cecropia*. The body resembles that of *cecropia*, except that the abdomen is banded with yellowish gray and black. The base of the fore wings is brown, thickly scaled with white towards the costa; below this is a brick-red blotch, longer and narrower than in *cecropia*. Beyond this is a white space, extending nearly from the base to one third of the length of the wing on the inner margin, but curving up to the costa in a rather narrow stripe. This is followed by a large irregular black blotch, broad at the costa (where it is thickly dusted with gray) and the narrow end extending to beyond the middle of the wing. On this stands the large white kidney-shaped central spot, which is surrounded with red, and divided by a reddish stripe at the outer end of the black blotch; it extends beyond it into a broad red white-dusted band, followed by a black one, so very thickly dusted with yellowish gray that it appears of that

color. This is succeeded by a gray space, divided by a black line (much less indented than in *cecropia*) into darker and lighter; above is a lilac space; on the inside is a row of rather large spots, the uppermost and the 4th and 5th being the largest. Hind wings white at the base, followed by a broad dark slate-colored space, on the outer half of which stands a large oval white spot, slightly surrounded with red, the outer part being incomplete, and it rests on a white band, much broader than in *cecropia*, followed by a broad red band, 3 or 4 times as broad as in *cecropia*, but followed outside by similar markings, only paler. The under surface differs from *cecropia* chiefly in the much paler color, and in the different position of the central spots.

[Mr. Kirby has kindly sent us a beautiful colored plate, prepared by Mr. Wailly, of this very interesting insect.—ED. C. E.]

NOTES ON A VARIETY OF ANTHEREA (TELEA) POLYPHEMUS.

BY ADOLPH CONRADI, BETHLEHEM, PA.

During the early part of last spring I obtained from a small maple tree three cocoons of *Anth. polyphemus*. In due time two fine females made their appearance, and a few days later, on examining the box again, I found suspended from the lid (wire gauze) a black looking specimen, which at first sight appeared to be a ♂ *promethea*. On closer inspection, however, I found it to be a beautiful aberration of *Anth. polyphemus* ♂. As it is the first one I ever found or heard of during nearly twenty years' collecting, I send you herewith a meagre description, which may be the means of bringing another specimen like it to the notice of the entomological world.

Antherea (Telea) polyphemus, L., var. ♂.

Antennæ very dark brown. Thorax and body a shade darker. Ground color of primaries same color. Upper margin gray with minute white spots. A white band running near outer margin from the base to tip of wing, terminating in a black oblong spot, surrounded by an irregular white narrow band. In the centre of primaries another very dark line running from upper to lower margin. Towards the inner margin an irregular white line, shaded with black. Near the centre there is an ocellate, transparent

spot, bordered with a double ring of ochre and blue. Secondaries, ground color same as primaries, with a narrow marginal white band bordered with blue. In centre there is an ocellate transparent spot bordered with ochre, shaded towards the inner margin with a blue spot, the whole surrounded by a black band terminating in a white line towards the inner base. Raised from the cocoon taken in spring of 1883.

SPINNING CATERPILLARS.

BY FREDERICK CLARKSON, NEW YORK CITY.

Milton, when he wrote of Nature's bounty, and referred to the

. "Millions of spinning worms
That in their green shops weave the smooth-hair'd silk,"

had thoughts no doubt of the obedience due from Nature's subjects to Nature's King. A work ordered and a work performed. Were men as loyal to their King, what a garment of righteousness would each man weave wherein to appear, amid the flood-light at the Court on high! The caterpillar, at the sighing of the autumnal wind, enfolds itself in its silken shroud, preparatory to a winged flight, leaving to the world the record of a life well spent—an unbroken thread of duty done: a treasury of silk to deck the sons of men

"In courts, in feasts, and high solemnities."

To grace man's outer life, and if in proper mood and contemplation, his inner life as well; for Nature's lessons are not learned under their external forms, but under the spiritual beauty and verities they represent.

"That not a natural flower can grow on earth
Without a flower upon the spiritual side,
Substantial, archetypal, all aglow
With blossoming causes—not so far away
That we, whose spirit-sense is somewhat cleared,
May not catch something of the bloom and breath."

Nature has many voices. She speaks to us in joyful song amid the activities of the day, and in saddening dirges during the still hours of the night, while throughout her wide domain, in song of life and dirge of death, she whispers Resurrection.

Among the multifarious forms of insect-architecture, all of which are of absorbing interest, I purpose at this time to record a few notes relating

to the cocoons of the Bombycidae. The cocoon made by the Worm of the Orient has, from the circumstance that its silk is so extensively used in manufacture, been fully described. This paper concerns those of the Polyphemus, Cecropia, Cynthia, Luna and Promethea caterpillars, and it may be regarded as an endeavor to foster an organized system of silk culture with these worms, the Cynthia worm especially favoring cultivation, as it is double brooded, and since its introduction from the East, together with its food plant, the Ailanthus, it has become largely distributed throughout the country. The habitat of some of these species is co-extensive with the Union, and silk culturers are alike advantaged in every section of the country with an abundance of food plant in our native trees. The silk produced by them, though not of as fine a texture as that spun by the Mori Worm, is yet abundant and of much greater strength. Notwithstanding the fact that the pointed end of the cocoons of the Cecropia, Cynthia and Promethea worms is left open for the exit of the moth, the threads are unbroken and the cocoons can be unwound. The Mori Worm covers the interior lining of the cocoon with a gummy secretion, and when the moth escapes, the threads, if not broken, are thought to be in such danger that cultivators of silk destroy the pupa before the period of emergence. There are Entomologists, however, who deny that the threads are broken at all, for they admit having succeeded in unwinding cocoons from which the moths have escaped. The Cecropia, Cynthia and Promethea worms line each layer of silk, as well as the interior of the cocoon, with a gummy secretion, leaving the silk at the exit opening free of agglutinating properties. This allows of a ready escape of the imago without danger to the thread. If the cocoons of these worms be divided lengthwise, and immersed in boiling water for a few seconds, a careful manipulation will permit the separation of the several layers of silk, when, by the aid of a lens, the life work of the caterpillar is beautifully presented and the continuity of the thread can be discovered. The exterior section of the cocoons of the Cecropia and Cynthia worms can be easily divided into three layers of silk, while the interior portion is divisible into six. The Luna and Polyphemus worms construct cocoons somewhat similar to the Mori Worm, and as all parts of the interior lining are sealed, it becomes prudent, perhaps necessary, to destroy the pupa.

NOTES ON THE LARVA OF PANTOGRAPHA LIMATA, GROTE.

BY PROF. C. H. FERNALD, STATE COLLEGE, ORONO, ME.

On the 27th of September, 1882, while riding through Mt. Hope Cemetery, near Bangor, the leaves on several trees of Basswood (*Tilia Americana*) were observed to be rolled in a peculiar manner, and to contain a green larva with a black head, which I supposed at the time to be that of some Tortricid; but it quite puzzled me, as it was larger than the larva of any Tortricid in this region with which I was familiar. Miss Murtfeldt, who was riding with me at the time, said that she had seen the leaves of Basswood attacked and rolled in precisely the same manner in Minneapolis, but failed to secure any of the larvæ.

A large number of the rolled leaves were obtained and brought home from Mt. Hope, but the larger part of the larvæ had been destroyed by parasites or had escaped from their domiciles. Miss Murtfeldt took home with her a part of those remaining, but they failed to emerge. Of those which I retained, three pupated, one Oct. 10th, and the others a little later. They were kept in a warm room, so that without doubt the results are not the same as would have taken place out of doors. The one which went into the pupa state Oct. 10th, emerged Nov. 3rd, and proved to be *Pantographa limata* Gr. A few days later another emerged, but was crippled. The third failed to emerge either then or the following summer.

I have little doubt that if left to themselves they would have changed to pupæ among the leaves on the ground, and remained in this state during the winter, emerging the next season; for no thoughtful insect would emerge in such cold weather as we usually have here in November, but the facts must be learned hereafter.

The larva cuts the leaf across from near the middle of the side, past the midrib nearly an inch, in the larger leaves. This cut, which is about an eighth of an inch wide, first starts directly across the leaf, then curves gradually towards the apex, then back to the former direction, so that the entire cut is nearly in the form of the letter S, somewhat straightened out. The part beyond the cut is rolled over so as to form a cone with the apex towards the base of the leaf, and when enclosing a larva, both ends are turned in, so as to close the openings. In drawing the parts of the leaf together, the larva spins the thread from side to side—from the side of the cone to the surface of the leaf beyond, about forty times in a place before moving to another. The second set of threads, which is from a fourth to

a half an inch from the last, frequently draws the parts of the leaf together so much that the threads of other bundles hang in a loop. The larva deposits its excrement within the cone, towards the larger end.

The full grown larva is 25 mm. long, when at rest, and 30 when in motion; fusiform and somewhat stout in proportion to the length.

The body is pea green, about the color of the under side of the leaves of Basswood. The usual warts are present, of a dull brownish color and emitting pale hairs. The head, thoracic shield and legs are pitchy black, while the mouth parts are a little lighter, and there is a small black spot on each side of the first segment back of the head, just in front of the spiracle. The anal plate is dull brownish.

When preparing to change to the pupa state, the larva draws a portion of a leaf around it, lining it with silk, thus forming a delicate cocoon.

Three species only are at present known in the Pyralid genus *Pantographa*. The first two, *scripturalis*, of Brazil, and *anastomosalis*, of Java, were described by Guenee under the genus *Pionea*, the second one with doubt, and there was even doubt as to the locality. When Lederer made his revision of the *Pyralidæ* of the world, he established the genus *Pantographa* for these two species. Later, Mr. Grote described the species *limata* from North America, and I must confess that it is wonderfully near the Brazilian *scripturalis*, and may eventually prove to be the same species.

While the imago of *Pantographa limata* Gr. is a typical Pyralid, the larva is so very much like Tortricid larvæ, both in structure and habits, that I unhesitatingly referred it to the *Tortricidæ* till it emerged, and I could discover what it really was.

WEEVIL VERSUS CURCULIO.

BY W. L. DEVEREAUX, CLYDE, N. Y.

Curculio is an ancient Roman word, not at all used to denote a plum insect. It is slightly difficult to pronounce, and it certainly fails to inform the popular mind as clearly as the suggestive old Anglo-Saxon word, "weevil."

Weevil, in its original and right use, designates only insects of the snout-beetle kinds, like the plum weevil, bean and pea weevils, corn or

granary weevil, rice, pine, nut, water, and other weevils. Perhaps the only erroneous use of weevil made in this country was with the little yellow maggot of the wheat fly.

Entomologists most often write *plum weevil*, and pomologists use *curculio*, which is the name generally used by farmers and others. Evidently this name was adopted from its scientific generic title, as then known in the early part of this century, but almost before its adoption into common parlance, it was removed from scientific nomenclature. Had it not been introduced then, it would hardly be found in the English vocabulary now. It is in use nowhere else at the present time, being an obsolete technical word, known only in the books of the earlier writers on insects; and in its original use by Pliny and the Latins, over 1800 years ago, it was applied to the corn worm, which by the English was called *weevil*, and by the French *calendre*, since Latinized into *Calandra* by Clairville for the name of a genus, containing our corn and rice weevils.

The word *curculio* reached its greatest ascendancy when Linnæus, 120 years ago, transferred the name from the Romans into his natural system, employing it in a generic sense to designate all snout beetles.

Westwood,* in 1839, states that "In this tribe of insects, as elsewhere, from the multiplicity of named groups into which the old Linnæan genus has been separated, without the adoption of any principle regulating the retention of the old generic name, it has been entirely sunk, so that we find no modern genus *Curculio*."

It has, however, been retained by some classifiers for a few beetles, not including the plum weevil, until now, while all writers employ a family name, *Curculionidæ*.

The plum weevil was first described by Herbst, in 1797, under the name *Curculio nenuphar*. The specific name *nenuphar* is the French name for the great European water lily (*Nymphaea alba*).

About 1830, Schönherr erected the genus *Conotrachelus*, meaning conical thorax or throat. At the abandonment of the name *Curculio*, our plum weevil fell into this genus, and hence is known as *Conotrachelus nenuphar*, Herbst.

There are about thirty species of *Conotrachelii* in N. America, all agreeing in structure quite closely with the plum *Conotrachelus*. The

* Westwood, Introd. Mod. Classif. Insects, 1., p. 348.

butternut weevil appears so closely like it that it has often been pronounced a large plum weevil.

No other member of this genus has been found attacking as many fruits as this plum weevil. Most species confine their depredations to a single kind of plant, like the quince weevil, *Conotrachelus cratagi*, which deposits its eggs in that fruit. The plum weevil is, however, a general fruit weevil, attacking, with only an occasional marked preference, every species of fruit in the botanical genera, *Prunus*, *Pyrus*, *Cydonia*, and some other species in other genera of the Rose family; and Miss M. E. Murtfeldt states* that she has bred them from gooseberries. In this connection it is singular that the grape has not suffered from its crescent thrust. Finally, from its habit of breeding in the "black knot" of the plum, it must be considered the most omnivorous of all the 1050 species of weevils now known in N. America.

LIFE HISTORIES OF FIVE SPECIES OF SCOPELOSOMA.

BY ROLAND THAXTER, KITTERY POINT, MAINE.

During the spring of the past year I was fortunate enough to procure eggs of the following species of *Scopelosoma*, and succeeded in rearing a sufficient number of each to ensure an accurate observation of their larval differences. The matter is of some interest, as it settles beyond question the specific difference between the two species known in collections as *S. Walkeri* and *S. vinulenta*, which have been enumerated as varieties of the mythical *sidus* in recent lists. That one of these species is really *sidus* I think there can be little doubt; but which should be referred to it is somewhat uncertain.

My friend, Mr. Chatfield, has had the kindness to send me for comparison with my own material, a specimen of a *Scopelosoma* taken by him at Albany, which, he informs me, has been pronounced by Mr. Grote to be with little doubt "a veritable *sidus*." On comparing my material of *Walkeri* (determined thus by Mr. Grote) with this specimen, I find no essential differences between the two, Mr. Chatfield's specimen being somewhat more clearly marked and darker than usual, and most decidedly not "d'un rouge de brique * uni, avec les lignes a peine distinctes."

* Rept. Entomologist U. S., C. V. Riley, 1881-1882, p. 66.

If Mr. Grote is correct in referring this specimen to *sidus*, we must consider *Walkeri* as a synonym. A comparison of *Walkeri* and *vinulenta* with the European *satellitita* and Gueneé's description of *sidus*, leads me, however, to think that the latter species may be more properly identified with *vinulenta* than with *Walkeri*, for in *vinulenta* only are the primaries noticeably broader and shorter and more rounded at the apex than in *satellitita*; and the even brick-red color is very characteristic of *vinulenta*, while *Walkeri* has a decidedly purple cast, blackish in Mr. Chatfield's specimen, with the lines much more distinct. For these reasons I feel very decidedly inclined to consider *vinulenta* = *sidus*, although I retain the old name in speaking of this species in the following descriptions.

The larvæ of these five species all have the same form and habit; are omnivorous, and live in a case between two leaves, or within the fold of a single leaf—when young making a silk-covered burrow between two ribs or eating out a cavity in a bud somewhat after the manner of a Tortricid. When fully matured and somewhat soiled, it is hardly possible to separate the species. *Devia* and *vinulenta* are very nearly related in this (the larval) stage, and separable at a glance from the others, when in good condition. *Tristigmata* is readily separable from the two remaining species by the yellow tinge of the lateral line, which I found characteristic of all, without exception, of a very large series of specimens. *Morrisoni* and *Walkeri* are the most difficult to separate, but the more even and richer color of the sub-dorsal and dorsal regions, together with the obliteration of the dorsal and sub-dorsal lines and the clear white lateral line, render the latter species sufficiently recognizable when fresh. The lateral lines are sub-stigmatal, the stigmata black, the body sparsely covered with minute tubercles bearing short colorless hairs in all the species. Form cylindrical, tapering very slightly, head moderate.

Scopelosoma Morrisoni, Grote.

Eggs laid on oak twigs April 22. Straw color changing to reddish; flattened inferiorly, a central superior depression from which radiate beaded ridges. Transverse diameter about .6 m m. Hatched May 4.

First Stage.—When just hatched, color livid yellowish green with blackish superior and anterior tinges. Head large, jet black. Legs and prolegs black. A frontal semi-circular black plate on seg. 1. After feeding and when nearly grown, indications of a dorsal, sub-dorsal and lateral streak. Color light green, darker superiorly. L. 2-3 m m.

Second stage May 15. Above dull purplish, darker in the subdorsal region, with a greenish tinge. Dull yellowish inferiorly, except on segments 1-4, which are tinged with purplish. A dorsal, two sub-dorsal and a sub-stigmatal whitish line, the two sub-dorsal ones less clearly marked, especially the inferior. Setiferous tubercles, which bear short colorless minute hairs, blackish, indistinctly ringed. A few whitish mottlings between the longitudinal lines. Stigmata blackish, indistinctly ringed. Legs and prolegs black. L. 6 m m.

Third stage May 22. Much as before; the markings more distinct, especially the dorsal and lateral lines. Purple shades most prominent in region of stigmata. L. 10 m m.

Fourth stage May 28. Color above and below on segments 1-3 dull purple tinged with green dorsally. Below light greenish; a patch of purplish in the sub-stigmatal region of each segment. Dorsal line with a bluish tinge. Head light brown. L. 16 m m.

Fifth stage June 2. Marked as before, but less distinctly. Colors duller and darker. L. 25 m m.

Sixth stage June 8. Mature larva. Dull blackish with a slight bluish green tinge and lateral dull purplish shades, obscurely mottled. Dorsal streak indistinct, bluish white, somewhat irregular. Sub-dorsal lines broken, but tolerably distinct, the superior edged with blackish. Lateral streak white with a bluish tinge. Stigmata black. Setiferous tubercles minute, black, ringed with bluish white; those below the lateral line more distinct. The superior sub-dorsal line cuts the frontal plate of segment 1 very clearly, and is there tinged with yellowish. Rather stout, slightly tapering. L. 35 m m.

Scopelosoma Walkeri Grote.

Eggs as in *Morrisoni*. Laid April 25; hatched May 6.

First stage May 6. Not separable from *Morrisoni*.

Second stage May 16. Not separable from *Morrisoni*.

Third stage May 23. Somewhat darker than *Morrisoni*, and more distinctly purplish. Head much darker and inferior sub-lateral line less distinct. But varies so as to be hardly separable.

Fourth stage May 29. Somewhat darker and less distinctly marked than *Morrisoni*.

Fifth stage June 5. Much darker than *Morrisoni* and more evenly colored, being of a rich, velvety black-purple. The sub-dorsal lines

hardly visible. The lateral line clear, contrasting white, tinged with purple on segments 2 and 3. Setiferous tubercles smaller than in *Morrisoni*.

Sixth stage June 10. Mature larva much darker and more richly colored than *Morrisoni*. Above velvety black with a purple shade and some greenish tinges. The dorsal and sub-dorsal lines barely indicated. Setiferous tubercles barely visible, those below the lateral line more distinct. Lateral line clear white, contrasting, somewhat obliterated on segments 2, 3, 4, 11, 12. Superior sub-dorsal line is clearly marked through frontal plate of segment 1, and is tinged with yellow. Beneath bluish green. The sub-lateral region has a few pinkish shades, as does the ventral portion of segments 1 to 4. Form somewhat stouter than *Morrisoni*. Head more broadly edged posteriorly with light brown. L. 30 m m.

Scopelosoma vinulenta Grote.

Eggs as in *Morrisoni*. Hatched May 9.

First stage May 9. A little lighter than the two preceding species, but hardly separable.

Second stage May 18. Light green with slight lateral purplish shades. Head black.

Third stage May 24. Purple shades, except on segments 1-4, confined to the region included by the lateral and superior sub-dorsal lines. The inferior sub-dorsal line hardly visible. Dorsal parts distinctly blue-green. A continuous whitish dorsal line, broader, though less well defined than in *Morrisoni* of same stage. Beneath light green. Head light brown, darker anteriorly. L. 10 m m.

Fourth stage May 30th. Much as before; the purple duller and clearly defined. Dorsal and lateral lines more distinct. Inferior sub-dorsal line merely indicated by a few whitish mottlings. Head shining brown. L. 16 m m.

Fifth stage June 6th. Darker. Dorsal parts tinged with purple. Lateral line distinct, whitish contrasting above. Beneath light bluish green with purple tinges on segments 1-4. Sub-dorsal line visible on segments 1-3. Head more red brown. L. 25 m m.

Sixth stage June 13. Mature larva. Dorsal portion dark olive green mottled with darker shades. Region between superior sub-dorsal and lateral lines dirty wine color, somewhat mottled. Dorsal and superior sub-dorsal lines moderately distinct. Inferior sub-dorsal line marked by a

few dots. Lateral line less distinct and suffused with purplish. Beneath livid; red-purple on segments 1-4. L. 32 m m.

Scopelosoma tristigmata Grote.

Eggs as in *Morrisoni*, laid April 24.

First stage May 5. Not separable from *Morrisoni*.

Second stage May 16, third stage May 22. In neither separable from *Morrisoni*.

Fourth stage May 28. Colored and marked as in *Morrisoni*, but the colors decidedly brighter and the lines and setiferous tubercles more distinct. L. 15 m m.

Fifth stage June 3. Somewhat lighter and more clearly marked than *Morrisoni*. The setiferous tubercles of dorsum decidedly larger, affording a reliable character for separation in this stage. L. 25 m m.

Sixth stage June 8. Mature larva. Much like *Morrisoni* and readily mistaken for it, but differing in the richer color, the more indistinct dorsal and sub-dorsal lines; but especially by the lateral line, which is broader posteriorly, and differs in every instance by a distinct orange-yellow tinge, which, though not particularly noticeable, is never present in *Morrisoni*. Moreover, the superior sub-dorsal line does not extend to the head, and is much less distinct. L. 30-35 m m.

Scopelosoma devia, Grote.

Eggs as in *Morrisoni*.

First stage. Milky white. Head, legs, prolegs and anterior plate of segment 1, black. L. 2 m m.

Second stage. Milky white, clearer than before. Setiferous tubercles black. A faint purplish lateral and dorsal tinge.

Third stage. Much as in the same stage of *vinulenta*, though paler.

Fourth stage. Paler than any of the preceding species, but nearest to *vinulenta*, from which it differs by a tolerably distinct sub-dorsal line, and by the absence of any purple shades on segs. 1-3, except above the lateral line, which is white. Dorsum light bluish green, mottled with whitish. Beneath very light colored. Prolegs black. Head black anteriorly, brown posteriorly.

Fifth stage June 10. Very near *vinulenta*, but much paler. Above greenish white, with a bluish tinge and darker olive shades. Dorsal and superior sub-dorsal lines distinct, contrasting with their edging of dark olive. The region between the superior sub-dorsal and lateral lines is

dark dull olive green, tinged with purple; darker inferiorly, with a few white dots. Lateral line broader than in *vinulenta*, but less clear. Purple tinges at base of prolegs, which are black. Head much lighter than *vinulenta*, black anteriorly.

Sixth stage June 15. Nearest *vinulenta*, but a darker or blacker looking larva. A broad dorsal blackish band attenuated intersegmentally, and including the hardly visible median dorsal streak, which terminates in an oblong spot on anal segment. The remainder of dorsal surface is mottled greenish, gray and blackish. Superior sub-dorsal line broadly edged with black; but inconspicuous, except on first and last segments. Lateral line broad, more or less clearly defined, whitish, with blackish shades. Beneath light greenish. Else as in preceding stage. L. 30 m m.

The larvæ of all these species entered the earth during the second and third weeks of June, spinning a slight cocoon, in which they remained without changing until August, the imagoes appearing during the first week of September. The pupa is light yellow brown, rather short and stout. The larvæ of *devia* were more delicate than the others, and only a few were brought to maturity and inflated, so that no imagoes were obtained.

Although *Morrisoni* and *vinulenta* are such abundant species in most localities, I have but once found the larva of any *Scopelosoma* when collecting, and I now recognize this to have been *vinulenta*, which was feeding on *Azalea viscosa*.

It will now be of interest to breed the four remaining species of this genus, which are of a somewhat different type, and especially *Moffatiana* and *Grafiana*. It is a question which can only be decided by careful breeding whether these two are identical, as some Entomologists suppose. For my own part I am still inclined to think them distinct, as I have found no difficulty in separating the two species in a large series of specimens, although breeding from the egg may show them to be varietal forms.

I may add that any one intending to rear larvæ of this genus will do well to keep the imagoes frozen on ice until spring is far enough advanced to furnish tolerably mature leaves, since handling the young larvæ among small, sticky, immature leaves and buds is a most tedious operation, which is rendered still more difficult by the habit of concealment peculiar to these larvæ.

NOTES ON A FEW SPECIES OF COLEOPTERA WHICH ARE
CONFUSED IN MANY COLLECTIONS, AND ON SOME
INTRODUCED EUROPEAN SPECIES.

BY JOHN HAMILTON, ALLEGHENY, PA.

In exchanging Coleoptera it is common to find many erroneous determinations of species. While these errors are for the most part individual, several are wide spread and seem to be perpetuated by tradition from the older collections. The object of this paper principally is to direct attention to a few of the latter.

1. *Triplax thoracica* Say, and *T. flavicollis* Lac. These species are often found in colonies feeding together on the same fungus, and have the same appearance. The separation of mature specimens is easy, the under side of *thoracica* being entirely rufous, while the metathorax and abdomen of *flavicollis* are black or piceous.

2. *Brachyacantha indubitabilis* Crotch. Several exchange lists contained this species; but when it came to hand, in every instance it proved to be *Hyperaspis signata* Oliv., which is of a similar size and appearance. Apart from generic characters, *indubitabilis* is more convex and the elytra are not compressed at the sides. The elytral yellow spot is noticeably nearer the base, and there is a smaller one near the apex, which is wanting in *signata*. The latter is widely distributed, while Illinois is given as the *habitat* of the other.

3. *Epierus pulicarius* Er. The insect usually sent by this name is the common *Hister subrotundus* Say. A glance at the head is instantly decisive. In the former the front is convex; in the latter, broadly concave; otherwise there is great similarity.

4. *Anomala minuta* Burm. This I have never seen, nor yet a description of it. All the specimens received in exchange so named have proved to be the black form of *varians*.

5. *Dromæolus striatus* Lec. I have not yet succeeded in obtaining this from any of the lists. There was sent to me twice *cylindricollis* Say, and six times *Nematodes penetrans* Lec. The species of the genus *Nematodes* should be of easy recognition, as in all of them the last abdominal segment ends in a spine, and on the thorax there are two, or four, deeply indented impressions or punctures.

6. *Calopteron reticulatum* Fab., and *typicum* Newm. Collectors seem

to think these names represent two species. Those having *reticulatum* are always endeavoring to obtain *typicum*; while those having the latter are always seeking for the former, without either of them succeeding satisfactorily. The literature of the subject is, perhaps, answerable for the confusion. The catalogue of the species of *Calopteron* (by Crotch) is now erroneous and obsolete. Dr. Leconte, in his recent Synopsis (Trans. Am. Ent. Soc., vol. 9, p. 63), corrects certain errors that occurred in his former Synopsis (Jour. Acad. Nat. Sci., ser. 2, vol. 1, p. 74). He now makes *terminale* Say a species, and places *typicum* Newm. as a synonym of *reticulatum* Fab., referring to these two names all the forms now known east of the Rocky Mountains, regardless of the color of the thorax and elytra—to *reticulatum*, those having two elevated elytral costæ; and to *terminale*, those with four. By reference to the foot note (*ib.* p. 63) it will be seen that two unfortunate errors occur in the text at page 20, which, if not observed, would lead to great confusion.

7. *Euderces pini* Oliv. Five times this has appeared on the lists of some of the more accurate of my correspondents, and as many times, instead, have I been sent *Psenocerus supernotatus* Say. I could scarcely account for this, and for the great demand for so common and so widely distributed an insect as *P. supernotatus*, till an appeal for the correctness of the determination *pini* was made to the Journal of the Acad. Nat. Sci., ser. 2, v. 2, p. 158, the writer stating that Dr. Leconte had several years ago so named his insect. Reference to the place cited shows that Dr. Leconte then regarded the *Callidium pini* Oliv. and the *Clytus supernotatus* Say as one species, which he placed in the genus *Psenocerus*. Subsequent investigation proved that *pini* (which had been unknown in nature to Dr. Leconte) was different from *supernotatus*, both as to species and genus. The error was corrected in the books, but it has given rise to a great mistake in the tradition of the insect. I have not yet seen *pini*, but from the description of Dr. Leconte (Smithsonian Misc. Coll. 1873, vol. xi., p. 202), it certainly resembles *P. supernotatus*. To distinguish them at a glance, it is only necessary to remember that the thorax of the former, instead of being pitted, is longitudinally rugose, and that there is on the elytra anterior to the middle a smooth, ivory white, obliquely transverse line which is wanting on the latter. *E. pini* seems rare. *P. supernotatus* is one of the few Cerambycids that occasionally hibernate. In February of the present year, I found three in the folds of a *Cecropia* cocoon taken from some currant bushes.

8. *Dermestes Frischii* Kugel. No notice of this species as having been found in our Fauna has been observed. It occurs in great abundance on the Atlantic coast at Brigantine, N. J., on sand-hills among fish refuse from the hotels. Till recently I regarded it as a variety of *vulpinus* Lin., but the receipt of *Frischii* from Europe enabled me to correct the error. Specimens sent to Mr. C. Spiess, Switzerland, labeled *vulpinus*, were also recognized at once as *Frischii*. It belongs to the division of the genus with *vulpinus*, from which it differs in being smaller, more scaphoid in outline, and in the last abdominal segment having only the *tip and a spot on each side denuded*. The under side is densely clothed with pure snowy pubescence, except the usual row of denuded spots on each side of the abdomen, and a smaller one on the episternum of the metathorax close to the elytra. The basal half of the femora is covered with the same white pubescence, and is not annulated. The pubescence on the sides of the thorax is the same as in *vulpinus*, though the triangular black spot has sparse semi-erect grayish pubescence, like the elytra.

9. *Dermestes murinus* Linn. Mr. H. F. Jayne, in his Revision of the Dermestidæ of the U. S., Proc. Am. Phil. Soc., 20, 350, describes *murinus* Linn., placing under it as varieties *caninus* Germ., and *rattus* Lec., and making synonyms of *nubilus* Say and *dissector* Kirby. With about fifty European specimens before me, and omitting the synopsis which is not applicable to the European *murinus*, I would call the description fair, provided "cinereus" is interpreted strictly to mean *gray tinged with black*; but in that sense, it does not apply to *nubilus*, in which *fulvus* takes the place of cinereous. If considered wise to unite in one species the above named forms, it might give better results to make *nubilus* a variety also, the differences between it and *murinus* being quite as appreciable as those of *caninus* or *rattus*. *Murinus* is black—has black antennæ, the mottling is of a different pattern, and it has not on it a fulvous hair or scale, except on the scutellum. *Nubilus* is blackish brown—has rufous antennæ, and the fulvous pubescence rather predominates over the dark.

Blaps mortisaga Linn. By whose authority this has been placed on our Catalogue is unknown to me. I have three insects from West Virginia, so called; but Mr. C. V. Riley, in a late number of the *American Naturalist*, says the Virginia species is *similis* Latr. It is greatly to be regretted that introducers of species frequently neglect to characterize them, so that when found by others they may be recognized. A name without a description is only an aggravation. In the present instance I

have Trans-Atlantic specimens of both species, and the American form differs from either of them fully as much as they do from each other. The European *mortisaga* and *similis* seem to vary much within specific limits; and had my American forms occurred in localities remote from one another, species-makers would doubtless have given each a distinct name. One has the thorax smooth, sparsely pitted, and the elytra sulco-striate; another has the former uneven with shallow depressions, and also the elytra similarly sculptured and without the faintest appearance of striation or indentation; while the third is intermediate. From the material before me I would say that the Virginia insect is as likely to be *mortisaga* as *similis*, with the chances in favor of some other of the numerous European species.

The species of *Donacia* are greatly confused, and as sixteen new species have been added since the last Revision (by Crotch), fourteen of which were described in Europe, a new synopsis accompanied by good descriptions is greatly desired. The same may be said of several other genera, especially *Brachynus*, *Bembidium*, *Heterocerus* and *Lachnosterna*, for all of which it is almost useless to exchange.

GLAUOPTERYX CUMATILIS AND MAGNOLIATA.

BY J. ALSTON MOFFAT, HAMILTON, ONT.

CUMATILIS, G. & R.

Color of front wings greenish white, with heavy black markings; in one light the whole front wing is suffused with a rich smoky brown, whilst in another it has a beautiful green gloss deepest in the centre. Hind wings brownish gray. Two specimens.

MAGNOLIATA, Guen.

Color of front wings white with black and light gray markings. Five specimens, varying considerably from one another. Hind wings white, more or less pure.

The markings in both forms are identical, but differing greatly in depth and distinctness. In *Cumatilis* there is a sinuate line across the centre of the front wing of a buff color, quite distinct. In *Magnoliata* it is so faint as to be scarcely perceptible. *Magnoliata* has a conspicuous black

spot in the centre of the front wing, which is obscured in *Cumatilis* by its heavy black markings. I have not seen the description given with either name, but in a foot note to *Cumatilis* in his Check List, Mr. Grote remarks: "Dr. Packard calls this species Gueneé's *Magnoliata*; Gueneé's descr., x., 455, calls the fore wings 'white, with black lines dividing the wing in five spaces,' with a 'thick cellular spot.' The hind wings are called 'white,' and there is no 'green' mentioned.

I think it is probable I have both forms in these specimens which I captured here last summer for the first time. I have no doubt they are one species, but so distinct in their appearance as to make the use of both names desirable and convenient; whilst from the boldness of its markings and the superior beauty of the insect, *Cumatilis* seems naturally to claim the precedence.

KIRBY'S "INSECTA."

We are glad to be able to announce that we have reprinted from the pages of the CANADIAN ENTOMOLOGIST, the "Insects of the Northern Parts of British America," compiled by the Rev. C. J. S. Bethune, M. A., formerly the Editor of the CAN. ENT., from "Kirby's Fauna Boreali-Americana: Insecta." The volume contains some 170 pages, and will be found of great assistance to Coleopterists. The price is \$1.

CORRESPONDENCE.

RARE MOTHS AT MONTREAL.

Dear Sir: Last fall an important addition was made to our list of Sphingidæ. A number of larvæ of *Philampelus achemon* were discovered on cultivated grape-vines growing in the open air, at a gentleman's residence in this city. Another western Sphinx, *Deilephila lineata*, is taken here, but very rarely. I have heard of only two specimens in ten years. Last year, a specimen of *Samia columbia* was brought to me, captured in a central part of the city. A few days afterwards I received a *Hepialus thule*, Strecker, described by him in No. 12 of his "Lepidoptera," from a specimen sent him from here by Mr. Caulfield. Mr. J. G. Jack, of

Chateauguay Basin, also has a very beautiful specimen of this moth. These three are, I believe, the only specimens in collections.

Montreal, February, 1884.

G. J. BOWLES.

ENEMIES OF PIERIS MENAPIA.

Dear Sir : The determination of the Hemiptera collected in Washington Territory permits me to give the following notice. *Podiscus crocatus* Uhler (MS.) is a very eager enemy of the pupa and the caterpillar before pupating, when it is very sluggish. The *P. crocatus* was everywhere common in the devastated forests, and observed in the act of sucking caterpillars. *Neides muticus* Say was seen near Loone Lake on the freshly laid eggs ; one specimen, together with the eggs, is before me.

Cambridge, Mass., Feb. 27, 1884.

H. A. HAGEN.

BOOK NOTICES.

THE GEOLOGICAL AND NATURAL HISTORY SURVEY OF CANADA.—The last volume issued by the Department is full of interest, and betokens much care and skill in its preparation. The maps are excellent. A new feature is a separate Catalogue of Canadian Plants, by Prof. John Macoun, the well-known Naturalist of the Survey. Part I.—Polypetalæ—is the first of this proposed publication, and it will be a source of great gratification to all our Naturalists to know that a commencement has been made in this desirable undertaking. We learn from Dr. Selwyn, the Director of the Survey, that "it is intended to enumerate systematically the plants of the Dominion of Canada, and to define their range in so far as the knowledge at present available enables this to be done. This, the first part of the Catalogue, will be followed by others as it is possible to complete the necessary examination of collections and authorities. We venture to express the hope that in due time the "Fauna" of the Dominion may be catalogued in a similar manner, and that the Natural History Survey will be carried on with energy and skill in all its branches.

THE CANADIAN RECORD OF NATURAL HISTORY AND GEOLOGY.—This magazine is published by the Natural History Society of Montreal, and takes the place of the *Canadian Naturalist*, formerly published by the Society. The *Record* will be published quarterly.—E. B. R.

(December, '83, No., mailed February 20, '84.)

(January, '84, No., mailed March 4, '84.)

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